

PLANTING & MAINTAINING YOUR LAWN





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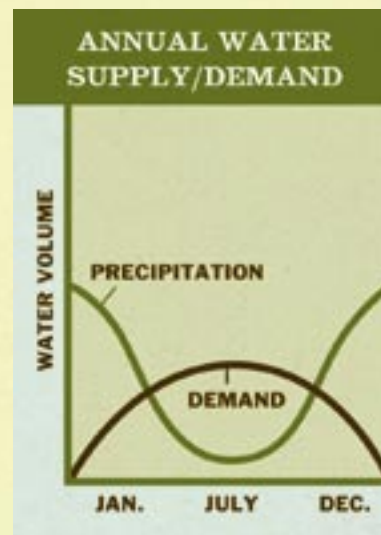


WATER SUPPLY

Nearly 30 percent of the water used in a single-family residence is used in the summer to water lawns. As a result, the Portland metropolitan area can use two to three times as much water in the summer months than in the winter months. This can be a problem because of the limited storage of our reservoirs and the lack of summer rainfall in the Pacific Northwest.

As our community grows, so will the water supply problem. We have two options to meet summer demands:

1. We can invest in costly new supply facilities, or
2. We can conserve water to reduce the demand on our existing supply.



Water conservation alone will not eliminate the need to increase our water supply, but it can make a big difference. It may also postpone or reduce our need to build expensive new supply facilities.

LOOKING AT LAWNS

We love lawns. A lawn can be a serene oasis, an open expanse where kids can play, and a source of pride. But they are thirsty. Lawns use about 2-1/2 to 3 times as much water as other plants in the landscape. Current research indicates that lawn watering typically results in as much as 50 percent water waste. This happens when water is lost to evaporation, runoff, overspray and overwatering.

The information in this booklet will help you learn how to properly install and maintain your lawn, keeping it green and healthy with the appropriate amount of resources — fertilizer, water, and your time.

BENEFITS OF TURF

There are many benefits to planting grass in landscapes. Proper soil preparation, planting, and routine maintenance are crucial to maximizing these benefits.

AESTHETICS - Turfgrass is versatile and functional. A well-maintained landscape can increase property value and create a sense of community pride. It complements trees and shrubs, and is ideal for foot traffic because it withstands trampling more than any other type of plant.


RECREATION SURFACE - Grass provides an excellent recreation surface for outdoor activities. It is a low-cost safety cushion for sport participants and spectators, a healthy surface for picnics, yard games and other outdoor activities, as well as a delight to walk on. It is also an ideal surface for dogs and other pets.

REDUCES RUNOFF AND SOIL EROSION - Grass is one of the most effective plant materials to reduce runoff and prevent soil erosion. When it rains or when we water, pollutants are moved into the thatch and surface soil levels where they are trapped, preventing them from washing into our water systems. With up to 90 percent of the weight of a grass plant in its roots, it is no wonder that grass is a very efficient erosion prevention device.

COOLING EFFECT - Research shows that turfgrass can be up to 30 degrees F cooler than concrete or blacktop and up to 14 degrees cooler than bare soil. The cooling effect of an average lawn can equal over eight tons of air conditioning (the average home air conditioner produces four tons of cooled air). The cooling effect is the result of the evaporation of water within the green leaves. Grass surfaces reduce temperature extremes by absorbing the sun's heat during the day and by slowly releasing it in the evening, thus moderating temperatures.

ABSORBS DUST AND OTHER AIR POLLUTION - With its extensive and intertwined system of leaves and roots, grass surfaces around the world are estimated to trap some 12 million tons of dust and dirt from the air annually. Many activities in our lives create gases that can be harmful such as carbon dioxide, ozone or methane. Grass requires carbon dioxide to survive. As it takes this gas out of the atmosphere it replaces it with oxygen. Grass is such an efficient carbon dioxide-oxygen converter that an area just 50 feet by 50 feet generates enough oxygen to meet the needs of a family of four.

PLANTING A NEW LAWN




Where do you begin? Whether you are installing a new landscape or redoing an existing landscape, first analyze your needs. Do you need a large recreational area for your family? Do you want an area in the front of your yard to appear green and well-manicured? Are areas you are considering for new turf easy to irrigate and maintain? Can plants such as low-water use groundcovers be used in areas such as narrow borders and parking strips? Could you increase planting beds and reduce lawn size? These are some questions to answer before making changes to turf areas or planting a new lawn. A smaller turf area helps to reduce the need for water and lawn maintenance while still meeting your own needs for aesthetics, recreation, and resource use, including your own time.

WHAT TYPE OF GRASS TO PLANT

Selection of the type of grass to plant depends on your individual aesthetic and maintenance needs. Generally, you want to plant a cool season turf type in our area. Warm season grasses are more successful in hot, dry climates. The following information can help you make decisions about which turf type best meets your needs.

PERENNIAL RYEGRASS



This is the most commonly planted turfgrass in western Oregon, and is fairly drought tolerant. Turf experts often recommend perennial ryegrass because it is easy to establish, grows vigorously and can compete with weeds (which reduces the need for chemical control). It forms an attractive turf for most of the year. Perennial ryegrass is thatchless, allowing good water penetration over many years if the soil remains porous. This turf type is highly adaptable to a wide range of soils from light and sandy to heavy and clay like.

Perennial ryegrass is quite disease-resistant with proper maintenance. It does well in light to moderate shade, but not in deep shade. Its color is moderately dark green with good density and fine leaf texture. It grows well in mixes with bluegrass and fine fescues for added cold and shade tolerance and a more hardy turf area that can be used for sport fields. It has a low growth habit, which is best mowed at 1 to 2-1/2 inches.

TALL FESCUES

Turf growers in western Oregon have not had much luck with tall fescue. It is a relatively new turfgrass in this area and is quite drought tolerant — it can go days or longer without water if it is irrigated slowly and deeply when it is watered. The whole soil profile needs to be wet each time it is irrigated in order for tall fescue to maintain its vigor. Tall fescue has the deepest root system of turfgrasses, with root system depths from 3 to 6 feet. It will stay greener longer in a drought. It

doesn't necessarily use less water (under some circumstances it may use more); it just uses it as a deep-rooted plant would. Other grasses, however, tend to displace tall fescues very quickly, making it not as appealing a choice as perennial ryegrass.

Tall fescue doesn't stay quite as green in the winter as perennial ryegrass. It has a medium to dark green color and moderate density. It is also somewhat coarser in texture than perennial ryegrass. This grass type can adapt to a wide range of soil conditions since it has a rather deep, extensive root system that makes excellent use of soil moisture and mineral nutrients. It also has a good tolerance to saline soil conditions. Optimum mowing height for this grass type is 2 to 3 inches. Tall fescue turf takes water readily because it produces little thatch.

FINE FESCUES



Fine fescues are a deep green color, have the finest grass blade of any lawn grass, and have an upright growth habit that creates a pleasing uniformity. This grass type has rapid germination and seedling establishment. It tolerates acid soil well, growing within a soil acidity range of pH 5.0 to 6.5 and has the lowest fertilizer requirements of any cool season grass. It is often used

in mixes with other grasses because of its ability to blend and is often used in bluegrass mixtures because it grows well in shade or drought-dry soil.

Fine fescues have a high drought tolerance for a cool season grass and can go dormant in summer if irrigation is withheld. Once moisture is supplied again it will green up quickly.

Fine fescues are best used in partially shaded areas under low maintenance. This grass type does best with a mowing height of 1 to 2-1/2 inches. Clippings from frequent mowings can be left on the lawn because fine fescues do not develop thatch. Fine fescues can also be left unmowed for the "meadow look."

BENTGRASS

This is the most dominant grass in landscapes in this area, but not by choice. Bentgrass is usually an "invader grass." It will take over even the best-maintained lawns planted with other seed types after a few years. It can be easily identified in early morning when dew hangs on the grass. It forms very dense, fine-textured patches, which hold the dew longer than other grasses. If you want to get rid of it, quick removal by chemical means or hand weeding is recommended before patches enlarge.

Bentgrass performs better at mowing heights below 1-1/2 inches. It looks its best when it is mowed at least once a week. To stay green it will need to be mowed two times a week. At these very low mowing heights, it requires water more often. Bentgrass produces thatch and will need to be de-thatched every one to two years. It dominates other lawn grasses because it grows well in the cool times of the year, tolerates drought by going dormant, requires very little fertilizer, and gets few diseases if it is not over-fertilized.

Creeping bentgrass is a specialty turfgrass that requires high maintenance and expert turf management. It is usually recommended only for golf courses due to its ability to withstand an extremely low cut as well as its ability to recover quickly from high traffic and other injuries (e.g., divots).

KENTUCKY BLUEGRASS

This grass does not do as well as the other grass types in this area. It is poorly adapted to wet and mild winters. It prefers cool, humid, semi-arid and temperate regions. It is a cool season grass with a deep, rich dark green color. It has dense and beautiful appearance with a medium leaf texture that has excellent leaf uniformity. It is moderately drought tolerant and does not do well in partial or full shade.



Optimum mowing height is 1-1/2 to 2 inches. It can develop some thatch at higher nitrogen levels. It performs best in fertile, non-acid reacting soil with good drainage.

COMMON MIXTURES

Typical seed mixtures include approximately 70 percent perennial ryegrass and 30 percent fine fescue. Hard fescue, a fine fescue (very narrow blades of grass), is the grass of choice in this mix due to its drought tolerance, good color, and resistance to red thread disease. Red thread disease is a fungal disease that looks like mats of red threads on the tips of leaves. This disease commonly occurs in turf that is in poor soil or a slow-growth period (such as drought times). It is primarily a cosmetic problem.

ECOLAWNS



An “ecolawn” is an alternative to conventional grass lawns. Ecolawns combine grasses with selected broad-leaf plants to produce an ecologically stable mixture of plants that require less maintenance than a typical lawn. For example, perennial ryegrass mixed with strawberry clover (*Trifolium*), yarrow (*Achillea millifolium*), English lawn daisy (*Bellis perennis*), Baby-blue-eyes (*Nemophila menziesii*), and Roman chamomile (*Chamaemelum nobile*) creates a green, white, pink, and blue carpet of plant material. This mix requires very infrequent mowing to maintain desired height (maybe once every three weeks), and little to no fertilizer and no pesticides. Often these mixes take at least two seasons to become established. Check with your local nursery or turf specialist for a mix you would enjoy.

WHEN TO PLANT

The best time to plant a new lawn is in the spring or fall to take advantage of rainfall and avoid the heat stress of summer. You can either plant seed or install sod. Seeding may not be as effective after mid-October, but sod can be laid as late as November if the weather isn't too severe. If you have old sod, strip it or work it into the soil completely before adding new seed or sod.

PREPARING THE SOIL

Before putting in new grass or sod it is very important to properly prepare your soil. For maximum growth and aesthetics, grass needs four essential factors: sunlight, air, water, and nutrients. Three of these four essential factors (air, water, and nutrients) are obtained from soil, but many soils lack the ability to provide these factors. Some have too much clay and may be very compacted, so cannot make the air and water available to the roots. Other soils are too sandy, making it difficult for water and nutrients to stay in the soil. Another problem is that the pH (the degree of acidity or alkalinity) is too high or too low. The best soil conditions for turf are loams, sandy loams and clay loams (easily crumbled soils) with a pH of 6.0 to 7.0. Almost all soils can be improved, but you need to know what you have before you can make the improvements. Take the time before you plant to improve your soil. This will save time and money in lawn maintenance once your lawn is established.

Take soil core samples from several locations in your yard and have them analyzed. Sampling information and materials are available at the County Extension Office (see Page 20 for the Web address). You can also have your soil tested by a commercial soil-testing laboratory. Check with your local nursery or the Extension Office for locations. Once you know your soil needs, add amendments to make it a healthy environment for your turfgrass.

The key to healthy grass is a deep root system. A healthy root is usually 8 to 24 inches deep. Add 6 to 12 inches of good topsoil to promote healthy root growth. The topsoil should be clay loam or sandy loam or other soil suitable to the area. Healthy plant roots can reach through several inches of topsoil for moisture, and can often go a week or more without water. In contrast, shallow root systems need more frequent watering as their root systems cannot reach moisture deep in the soil. Before you add the top soil, however, till to a depth of at least 2 inches. This will control most annual weeds, alleviate subsoil compaction, permit bonding of the topsoil to the subsoil, and improve root penetration and water movement.



Grading the soil to a 1 percent to 2 percent slope provides good surface drainage away from your house and other buildings. Smooth,

roll and lightly rake the surface. If time permits, allow the area to settle further with rainfall or by applying irrigation water. This will ensure a truly firm, level surface. Water the soil area thoroughly, up to 6 inches deep for best results. Then seed following the rates recommended on the turf seed package. Divide the grass seed in half and spread over the area twice in perpendicular directions to get consistent coverage. Rake the seed into the soil and roll again to firm and level the seedbed. If installing sod, roll it out after the soil is prepared as described above.

FERTILIZING

Fertilize new lawns with a 3-1-2 ratio of nitrogen (N), phosphorous (P) and potassium (K). Nitrogen is the most important element for successful turf growth. Use 1 lb. of nitrogen per 1,000 sq. ft. at the time of seeding, about three to four weeks after seeding, and again about six weeks later. To determine the amount of fertilizer needed for turfgrass areas, divide 100 by the nitrogen percent. If you have a 10-3-6 mixture, 100 divided by 10 is 10. Therefore, use 10 lbs. of this mixture for 1,000 sq. ft. of turfgrass area to achieve a rate of 1 lb. N/1,000 sq. ft. Each grass type, however, has its own requirements for fertilizing. Check with your local turfgrass specialist or consult the Websites provided in the back of this brochure for more specific information.

HOW MUCH FERTILIZER TO USE

$100 \div \% \text{ of nitrogen} =$
of lbs. of fertilizer per 1,000 sq. ft. of lawn

Example

$100 \div 10 (\% \text{ of nitrogen}) = 10 \text{ lbs. of fertilizer}$

WATERING

New plantings need to be watered lightly and more frequently than established turfgrass areas if the weather is dry following seeding. If laying sod, follow within a half hour with at least 1 inch of water. You may need to do this in short time increments to avoid runoff. New sod and seed need to stay moist for the

first few weeks to allow for successful establishment. For best results, follow the directions of your lawn care specialist until your new lawn is well established.

CARING FOR YOUR ESTABLISHED LAWN

Once your lawn is established it still needs some tender loving care. If you practice appropriate maintenance, you will be pleased with the results and your lawn will be green and healthy.

AERATION

Aerating your soil in the spring or fall (or both, if you can) each year can help correct excessive soil compaction which can cause water runoff during irrigation. It promotes moisture infiltration into the soil, efficient use of fertilizers, and better root growth. Deeper roots are better insulated from summer hot spells and require less frequent watering. The plugs left by the aerator can be left to dry for a couple of days and then bagged or "shattered" by your mower.

Leave the holes or fill them with a soil mixture that is lighter (more sandy) than the current soil. This fill soil will make its way into the compacted soil and break it up. Overseed the core holes by applying seed at 1/3 to 1/2 of the initial seed rate. You can rent or buy aeration tools. Check with your local nursery or your turfgrass specialist.

WATERING

Heat and wind cause water to evaporate more quickly. For best results, water early in the morning when the air is calm and evaporation is kept to a minimum. Watering in the evening is the next best time. If your lawn needs water, it will turn from bright green to dull blue or grey-green. If when walking on it, you can look back and see your footprints, because the grass no longer springs back from your weight, you need to turn on your sprinklers. Usually one spot will dry out before the rest; use it as an indicator of when your lawn will need water.

You can also use a soil probe or screwdriver to tell if it is time to water. If the core from the soil probe shows moisture in the root zone, wait to irrigate. If dry, then water. If a screwdriver can easily penetrate the soil beyond 2 inches, there should be enough moisture for the present time. If there is resistance of 2 inches or less, then it's time to water.

HOW MUCH TO WATER

Established lawns need an average of about 1 inch of water per week (a bit less in cool moist weather, and a bit more in hot dry weather). Overwatering can yield a shallow-rooted lawn, can leach fertilizers and nutrients out of the root zone, and can encourage disease problems that must be treated with expensive and often toxic chemicals. Supplying too much water also causes grass to grow faster, which means more Saturday mowing for you!

Whatever method you use to irrigate — automatic or manual in-ground sprinkler systems or hose end sprinklers — make sure you see that you are getting a uniform distribution of water to all areas of your lawn, especially when it is new. Choose sprinklers that send large drops of water close to the ground. These sprinklers are more water efficient than sprinklers that spray a fine mist and lose a lot of water through evaporation.

After you irrigate you can also use a soil probe or screwdriver to find out how deeply you're wetting the soil. Push the soil probe into the ground, twist it back out and you'll have a 10 inch or longer core that shows how wet the soil really is. If the core is moist only 2 inches deep, and roots could easily go down 6 - 12 inches, you need to water longer. If you are using a screwdriver it will move easily through moist soil but will stop when it reaches dry soil. If it stops a few inches or less, you should water a bit longer. If soil conditions are good, 1 inch of applied water should penetrate the soil about 6 inches.

Try to avoid overspray onto any hard surfaces such as sidewalks and driveways, and make sure that you know how much water your soil can absorb before it puddles up and runs off.

Never apply water at a faster rate than it can soak into the soil. If you need to water for 10 minutes and the water begins to run off the lawn after five minutes, then five minutes is the longest you should water at any one time. Wait 30 minutes to allow the water to soak in, and then water again. Keep repeating this process until you have applied water for the total number of minutes you have scheduled.

EVAPOTRANSPIRATION (ET)

This is a measurement of the total amount of water needed to grow plants. This term comes from the words evaporation (from the soil into the sky) and transpiration (the use of water by plants). There are other variables related to the weather and the plants that are used to compute this measurement, but to begin to understand the concept, just consider evaporation and transpiration.

For turf watering, we use the historical ET for cool season grasses in our area. You can make adjustments to fit your own garden and the weather. Based on the average historical ET for our area, the 1 inch per week works well June - September. If the temperature gets close to 90 degrees F or above for days at a time, water 1-1/2 inches during that week. You may be able to get actual ET rates from your local irrigation specialists or weather forecasters.

RAIN SENSOR

This is one of the easiest ways to upgrade any automatic system. Mount the rain sensor or shutoff device where it is exposed to open sky and won't fill with leaves or other debris. Rain sensors are designed to shut off irrigation systems when the moisture level reaches a preset amount, usually 1/4 inch. Once the moisture level subsides, the sensor re-enables the irrigation system, resuming the previous watering schedule.



SOIL PROBE

MOWING



It's best to mow your lawn at a height that is consistent with the variety of grass that was planted. Review the mowing information for the turf types previously mentioned.

It is also important to mow with sharp blades to prevent tearing and injuring the grass. The rule of thumb is to mow often enough that you never cut more than one-third of the height of the grass blades. Lastly, save some time and help your lawn and environment by leaving short clippings on the grass (where the recycled nitrogen is) rather than sending them in bags to the landfill.

FERTILIZING

Fertilizing can encourage root development and replace essential nutrients lost through leaching and transpiration. Use the right amount and the right kind for your lawn. Follow the package labels carefully.

In late spring and early fall use a 3-1-2 fertilizer. That is 3 parts nitrogen, 1 part phosphorus, and 2 parts potassium. A 6-1-3 mixture may be used in late fall to improve the lawn's appearance. (See the chart on Page 10 for how much fertilizer to use.)



There are two types of fertilizers: quick release and slow release. In quick-release fertilizers, all of the nitrogen is released immediately. Urea, ammonium sulfate, and ammonium nitrate are quick-release types. With quick-release fertilizers there is a quick response but fertilizer will need to be applied more often. With slow-release fertilizers, nitrogen is released over a long period of time. IBDU, sulfur-coated urea, and urea-form are slow-release types. Slow-release fertilizers are more expensive but turf growth and color are more consistent over time. A mixture of both quick-release and slow-release may produce the best results. Check with a lawn care specialist for your particular turf type.

You can also use compost or compost tea as a fertilizer. If using compost, apply 1/4 inch of well-aged compost in the spring and fall for best results. Another non-chemical option is alfalfa pellets. They come with trace minerals and all the other basics your lawn and garden need, plus the added value of organic matter that helps soil organisms thrive and feed your plants. When to fertilize: Fertilizing in late May encourages color development and maintenance of the root system during the summer. In late September and late November, fertilization should take place to generate new root growth.

CONTROLLING WEEDS

Weeds compete with plants for nutrients, light and water, so weed frequently. If you are weeding by hand or with a hand tool, make sure that you remove the entire weed, roots and all. Chemical controls of weeds can be effective, and is best done when weeds are small and require less active chemicals.



Surrounding shrub and tree foliage is also less susceptible to chemical effects in the fall. Use spot applications of herbicides rather than a broadcast application, which can harm other organisms in the soil and potentially pollute groundwater.

CONTROLLING MOSS

Moss is a symptom of compacted and acidic soil, low in organic matter. Moss also likes shade where grasses usually don't perform well. If you have lawn in a shady area, try thinning nearby trees to allow more sunlight in.

You can help control moss by aerating. If moss has already built up in your lawn, apply iron granules or liquid iron. Note that the moss will turn black before it decays into the soil and/or grass grows back. You may need to increase the pH of your soil by "sweetening" it with lime.

CONTROLLING THATCH

Thatch is comprised of grass clippings and other organic matter, and usually only becomes a problem when the ecosystem comprised of the soil, grass, water, and microorganisms is out of balance. Generally the microorganisms will eat the grass clippings and organic matter and provide food for the individual grass plants. If the system gets out of balance because of too much or too little water or too much fertilizer, the decay process slows or stops, and thatch starts building up.

When this happens water will run off instead of soak in, and your grass will be stressed. Regular aeration of your lawn will help water reach through the thatch and allow air into the soil as well, and will help the ecosystem to control thatch.

In situations where thatch exceeds 1/2 inch, a dethatching machine can be used to cut through this layer; removing excess root mass and promoting its breakdown. When aerating or de-thatching, it is also beneficial to top-dress the area with 1/4 inch of fine compost. This further speeds the breakdown of organic matter while releasing valuable nutrients.

ALTERNATIVES TO TURF

You may decide that you don't want a large lawn or want to diversify your landscape. If so, here are some other things to consider.

GROUNDCOVERS

Where foot traffic is infrequent or undesirable, consider groundcovers, low water-using plants, and mulches. Groundcovers offer much of a lawn's neatness and uniformity with less maintenance. Steep slopes, sharp angles, and narrow driveway strips

are difficult to water efficiently and are usually hard to mow, and are the first to suffer if they don't get enough water. Established groundcovers in these areas will reduce weeds, prevent erosion and will need less water and maintenance.

PERENNIALS AND SHRUBS

Perennial and shrub beds, as well as trees, can provide similar benefits for erosion control, cooling and pollution absorption as grass. There are many low water-use/low maintenance plants that are colorful and vary in texture. Contact your local nursery for more information on low water-use plants, shrubs, and trees.

HARDSCAPES

Instead of grass, you can select creative hardscape, such as pavers or decking. Decks for example, shade the soil and permit what rain you get to drip down between the boards. They also provide an excellent surface for entertaining, playing, or lounging.

A healthy green lawn that is well-maintained and watered appropriately can be an enjoyable place, where kids play, folks relax in lawn chairs, passersby enjoy the cool and refreshing hue of a healthy lawn. By making sure you practice appropriate maintenance — proper mowing, fertilizing and watering — your lawn will have fewer problems with weeds, diseases, and insects. A well-kept lawn can remain dense and attractive, providing you many moments of enjoyment as well as benefiting the environment.



RESOURCES

WATER AUDIT

Many local landscape companies are starting to offer landscape water audits. These audits consist of having a landscape professional evaluate your landscape and irrigation system and highlight issues relevant to your yard. The landscape professional typically gives customers a report listing recommendations to improve the landscape or irrigation system efficiency, as well as a watering schedule based on soil make-up and plant types.

Soil Analysis: _____

Irrigation Analysis: _____

Recommendations: _____

HOW DO I KNOW WHEN I'VE WATERED 1 INCH?

Here is a simple way to figure out how long to water your grass:

1. Set out five empty tuna cans (or something similar) at various places on your lawn within your sprinkler's range. Place cans halfway between the sprinklers and in the areas that generally receive the least amount of sprinkler water.
2. Turn on your sprinklers for exactly 15 minutes.
3. Measure the depth of the water in each can. Add the numbers and divide by 5 to get the average water depth (in inches) of all of the cans.
4. Check the following chart and locate your average water depth number. The box to the right of that number lists your total weekly watering time.

AVERAGE WATER DEPTH IN THE CANS (IN INCHES) AFTER 15 MINUTES	NUMBER OF MINUTES TO WATER 1" ONCE A WEEK
1/8	120
3/16	80
1/4	60
5/16	46
3/8	40
1/2	30
5/8	24
3/4	20
1	15
1-1/4	12

NOTES:

- During hot, dry spells you may need to increase your total weekly watering time.
- Never apply water at a faster rate than it can soak into the soil. If water puddles or runs off your lawn when you water, divide your total weekly watering time in half. Add a "resting period" between watering periods so that the water has time to soak into the ground and reach the grass roots. For example, if your watering schedule is 40 minutes per week, your new schedule might be to water for 20 minutes at 6 a.m., stop, then again for 20 minutes at 8 a.m. Keep repeating this process until you have applied water for the total number of minutes you have scheduled.
- If the water doesn't penetrate the soil well, the lawn may need to be aerated or de-thatched.

WEBSITES AND BOOKS

Water Right - Conserving Our Water, Preserving Our Environment; International Turf Producers Foundation; 1855 Hicks Rd., Suite C, Rolling Meadows, IL 60008; www.lawninstitute.com; www.turfgrassod.org

Ortho's All About Lawns; Meredith Books, Des Moines, Iowa; 1999

Healthy Lawns, Healthy Environment: Caring for Your Lawn in an Environmental Friendly Way; EPA (H7506C) Washington, DC 20460

How Much Water Does Your Lawn Really Need?
Sunset Special Report; June 1987

Turfgrass Resource Center: www.turfgrassod.org/trc

The All Seeing All Knowing Lawn Care Manual:
www.unce.unr.edu/publications/sp93/sp9302.pdf
(Publications; Horticulture, Gardening)

Landscape Concepts Inc.:
www.landscapeconcepts.com/resources

Lawn Talk: www.urbanext.uiuc.edu/lawntalk

County Extension Office information:
<http://extension.oregonstate.edu/locations.php>





For more information regarding water-efficient landscape practices, please visit the Regional Water Providers Consortium Website at www.conserveh2o.org, or call your local water provider.